Engine Mechanical Testing

Student/Intern information:

Name _____ Date _____ Class _____

Vehicle used for this activity:

Year _____ Make _____ Model _____

Odometer _____ VIN _____

Time off _____

Time on _____

Total time _____

Learning Objective/Task	CDX Tasksheet Number	2017 MAST NATEF Reference Number; Priority Level
• Inspect engine assembly for fuel, oil, coolant, and other leaks; determine needed action.	C004	1A4; P-1
• Verify operation of the instrument panel engine warning indicators.	C898	1A3; P-1
• Perform cranking sound diagnosis.	N/A	N/A
• Perform engine absolute manifold pressure tests (vacuum/boost); determine needed action.	C392	8A5; P-1
• Perform cylinder power balance tests; determine needed action.	C393	8A6; P-2
• Perform cylinder cranking and running compression tests; determine needed action.	C709	8A7; P-1
• Perform cylinder leakage tests; determine needed action.	C395	8A8; P-1

Materials Required

- Vehicle or simulator
- Vacuum gauge
- Tachometer (hand-held if the vehicle is not equipped with an in-dash tachometer)
- Insulated spark plug wire pliers (if using this method to disable the cylinders)
- Scan tool (if using this method to disable the cylinders)
- Compression tester
- Cylinder leakage tester
- Stethoscope
- Flashlight

Some Safety Issues to Consider

- You will be working under the hood of a running vehicle. Keep your hands and fingers away from moving belts, fans, and other parts.
- Be sure to only disconnect the proper vacuum hose. Many other hoses look alike but could carry gasoline or hot coolant under high pressure.
- During this test, you may be disabling the ignition or fuel systems. Be sure you only do so for the minimum amount of time to get your readings. Operating the engine with cylinders disabled may lead to damage of the catalytic converter or other parts. If in doubt, ask your supervisor/instructor.

- If you disable the cylinders by disconnecting the spark plug wires, you may expose yourself to extremely high voltage (up to 100,000 volts). Reduce the possibility of electrical shock by using appropriate insulated spark plug wire pliers.
- When running any vehicles in the shop, make sure you use the shop's exhaust ventilation system to discharge all exhaust gas safely outside.
- Always follow your supervisor's/instructor's directions on how to get the piston to top dead center. Failure to do so could cause injury or damage to the vehicle.
- Use caution when turning the engine to top dead center. If you do this by hand, be sure your fingers, hands, etc. stay clear of belts and pulleys that could cause severe pinching.
- Make sure the ignition switch is in the "off" position and the key is removed from the ignition switch during this job to prevent someone from inadvertently cranking the engine over while you are working on it.
- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

Performance Standard

0—No exposure: No information or practice provided during the program; complete training required

1—Exposure only: General information provided with no practice time; close supervision needed; additional training required

2—Limited practice: Has practiced job during training program; additional training required to develop skill

3—Moderately skilled: Has performed job independently during training program; limited additional training may be required

4—Skilled: Can perform job independently with no additional training